

Application No. 10/674,727
Amendment Dated February 10, 2006
Reply to Office Action of August 11, 2005

REMARKS

The Office Action mailed August 11, 2005, has been carefully considered by Applicant. Reconsideration is respectfully requested in view of the foregoing claim amendments, amendments to the specification and remarks that follow.

Allowable Subject Matter

Applicant acknowledges with appreciation the indication that claims 6 and 7 would be allowable rewritten in independent form including all of the limitations of the base claim and any intervening claims, and to overcome the objections noted in the Office Action.

Information Disclosure Statement

The Examiner has objected to the Information Disclosure Statements filed on July 30, 2004, and February 28, 2005. Herewith, Applicant submits a new Information Disclosure Statement properly citing the references from the previously submitted statements. Entry and consideration of these references is respectfully requested.

Specification

The Examiner has objected to the Abstract and the Specification and requires a substitute specification in proper idiomatic English. Herewith, Applicant submits a substituted Specification in proper idiomatic English and in compliance with 37 C.F.R. §1.52. The substitute Specification contains no new matter.

Regarding the Abstract, Applicant was unable to identify any grammatical errors. The Examiner is respectfully requested to point out specifically which phrases in the Abstract require revision. Otherwise, the Abstract is believed in condition for allowance.

Claim Objections

Claims 1-4, 6-7 and 11-14 have been objected to because of several informalities. By the present Amendment, claim 12 is cancelled, thus rendering the objections regarding claim 12 moot.

The remaining claims have been amended to overcome the rejections set forth in the Office Action.

Claim Rejections Under 35 U.S.C. §112

Claims 3 and 6-7 have been rejected under 35 U.S.C. §112, second paragraph. By the present Amendment, claims 3 and 6 are amended to overcome the rejections. Claim 7 depends from claim 6 and is thus believed allowable.

Claim Rejections Under 35 U.S.C. §102(b)

Claims 1-4 and 13-14 have been rejected under 35 U.S.C. §102(b) as being anticipated by Bartholomew U.S. Patent No. 5,931,509. Claims 1, 2, 4 and 13-14 have been rejected under 35 U.S.C. §102(e) as being anticipated by Ooi et al U.S. Patent Publication No. 2002/0163183. Claims 1, 2, 4 and 13-14 have been rejected under 35 U.S.C. §102(e) as being anticipated by Inoue U.S. Patent No. 6,860,515. Claims 1-4 and 11-14 have been rejected under 35 U.S.C. §102(e) as being anticipated by Takayanagi U.S. Patent Publication No. 2003/0218334.

Claim 12 is cancelled thus rendering the rejections regarding claim 12 moot.

Claim 1

Claim 1 is amended to more particularly point out and distinctly claim the subject matter of the present invention and render the same allowable over the applied references.

It is known to provide a connector having a retainer (e.g. 5) for receiving and engaging with a pipe (e.g. 65) to restrain longitudinal movement of the pipe with respect to the connector. However, the present invention relates to an anti-rotation device (e.g. 91, Fig. 6) arranged to restrain relative rotation of the connector and the pipe. Per claim 1, the anti-rotation device comprises a pipe connecting portion to be connected to the inserting side portion of the pipe in anti-rotating relation and a connector connecting portion arranged to be connected to the connector in anti-rotating relation. The connector connecting portion is constructed on or integrally with the pipe connecting portion. This arrangement is neither taught nor suggested by the references cited in the Office Action.

Bartholomew fails altogether to teach or suggest an anti-rotation device for restraining relative rotation of the connector (114, 116) and pipe (112). The connector taught by Bartholomew includes the housing (114) and the retainer (116). The retainer

(116) contacts the outer peripheral surface of the pipe (112) in a frictional manner. However, the retainer (116) is not arranged to prevent rotation of the pipe as does the anti-rotation device, per claim 1.

Ooi et al also fails to teach or suggest an anti-rotation device, per claim 1. Ooi et al teaches a connector (10) and retainer (18) similar to the Bartholomew reference. The connector and retainer receive a bent pipe (1). There is no anti-rotation device, per claim 1. As such, claim 1 is believed allowable over Ooi et al.

Inoue teaches a connector (5) for receiving a pipe (1). The connector (5) includes a pipe inserting portion (7), resin tube connecting portion (9) and a retainer (33). There is no anti-rotation device, per claim 1. As such, claim 1 is believed allowable over Inoue.

Takayanagi is owned by the Applicant and teaches a quick connector (1) having a tubular connector housing (3), and annular retainer (5) and a checker (7) for verifying complete connection between a pipe and quick connector (1) itself. The checker (7) does not prevent rotation of the pipe relative to the connector. There is no anti-rotation device, per claim 1. The part which the Examiner refers to as a connection portion is in fact a checker body (95), not a retainer. The checker body (95) is removed from a connector housing (3) when a pipe (65) is properly inserted and connected to a connector (1), and thereby has no relation to the anti-rotation device of this application. As such, claim 1 is believed allowable over Takayanagi.

Claim 2

Claim 2 depends directly from claim 1 and is thus believed allowable for the reasons stated above, as well as the detailed subject matter recited therein.

Claim 3

Claim 3 recites the anti-rotation device of claim 1 wherein the pipe connecting portion is C-shape in cross-section and presses against an inner surface of a portion of the other axial end of the connector housing so as to be kept narrowed in diameter on insertion through the opening in the connector housing. This arrangement is different from the cited references for the reasons stated above regarding claim 1. In addition,

Bartholomew and Takayanagi teach retainer devices that narrow in diameter while being inserted into the connector housing, but return to the original shape when completely inserted into the housing. On the contrary, per claim 3, the anti-rotation device of the present invention remains narrow in diameter once inserted in the connector housing and thereby exerts a necessary fastening force to prevent rotation of the pipe relative to the connector. This arrangement is neither taught nor suggested by the cited references.

Claim 4

Claim 4 recites the anti-rotation device of claim 2 and is thus believed allowable for the reasons stated above. In addition, an elastic layer is formed between the pipe connecting portion and the inserting side portion of the pipe. This is different from the sealing means mounted in the connector. Bartholomew, Ooi et al, Inoue and Takayanagi merely teach elastic material as sealing means. The elastic layer is not formed on an anti-rotation device between the pipe connecting portion and the inserting side portion of the pipe.

Claim 6

Claim 6 is rewritten in independent form and thus believed allowable in accordance with the indication of allowable subject matter in the Office Action.

Claim 7

Claim 7 depends from claim 6 and is thus believed allowable for the reasons stated above.

Claim 11

Claim 11 recites an anti-rotation device for a pipe and a connector to restrain relative rotational movement of the pipe and connector. In accordance with the comments provided above regarding claim 1, the cited references fail to teach or suggest the claimed anti-rotation device. As such, claim 11 is believed allowable over the applied references.

Claim 13

Claim 13 is amended and recites an anti-rotation structure for a pipe and a connector to restrain relative rotational movement of the pipe and connector. An anti-rotation device has a pipe connecting portion and a connector connecting portion constructed on or integrally with the pipe connecting portion. For the reasons stated above regarding claim 1, claim 13 is believed allowable over the cited references.

Claim 14

Claim 14 depends from claim 13 and is thus believed allowable for the reasons stated above. In addition, claim 14 recites circumferential engagement between the rotational preventative engagement recess and the connector connecting portion. This structure and function is neither taught nor suggested by the cited references.

Claim 16

Claim 16 depends from claim 1 and is thus believed allowable for the reasons stated above, as well as the subject matter recited therein.

Claim 17

Claim 17 recites an anti-rotation device including a pipe connecting portion and a connector connecting portion. For the reasons stated above regarding claim 1, claim 17 is believed allowable over the cited references.

In addition, claim 17 recites that the pipe connecting portion is C-shaped in cross-section and has knurls formed in an inner surface of the pipe connecting portion or an outer surface of the inserting side portion of the pipe for a circumferential range. The cited references fail to teach or suggest the C-shape pipe connecting portion and the knurls. As such, claim 17 is believed allowable over the cited references.

Claim 18

Claim 18 depends from claim 3 and is thus believed allowable for the reasons stated above as well as the detailed subject matter recited therein. The prior art fails to teach or suggest a pair of rotation preventative plates formed on an outer peripheral surface of the pipe connecting portion that extend radially outwardly from diametrically

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symmetrical positions on the outer peripheral surface of the pipe connecting portion, respectively.

Claims 19 and 20

Claims 19 and 20 depend from claim 18 and are thus believed allowable for the reasons stated above as well as the detailed subject matter recited therein.

Claim 21

Claim 21 depends from claim 2 and is thus believed allowable for the reasons stated above as well as the detailed subject matter recited therein. The prior art fails to teach or suggest an elastic layer formed between an inner surface of the pipe connecting portion and an outer surface of the inserting side portion of the pipe.

Claim 22

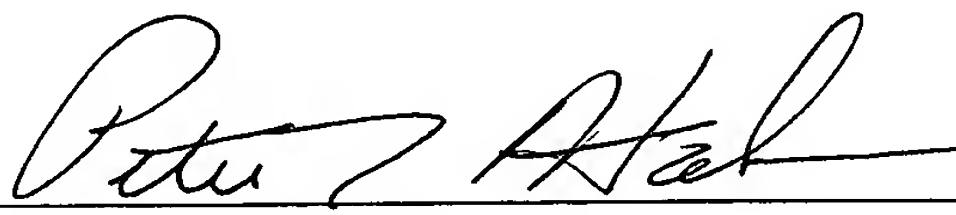
Claim 22 depends from claim 2 and is thus believed allowable for the reasons stated above as well as the detailed subject matter recited therein. The cited references fail to teach or suggest that an elastic material layer is bonded to an inner surface of the pipe connecting portion.

Conclusion

The present application is thus believed in condition for allowance. Such action is respectfully requested.

Respectfully submitted,

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